

This listing of claims will replace all prior versions, and listings, of claims in the application:

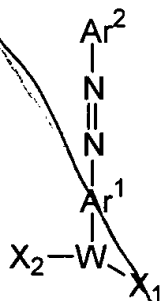
**Listing of Claims:**

Please cancel claims 26, 30, 31, 39 and 40.

Please amend claims 27-29, 32, 37, 38 and 41 as follows:

✓  
26. (Canceled)

27. (Currently Amended): A quencher-phosphoramidite reagent compound having the formula:



BT  
SUB  
C  
wherein

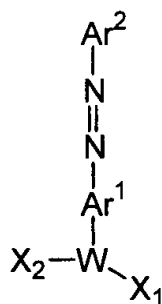
Ar<sup>1</sup> and Ar<sup>2</sup> are each independently a substituted or unsubstituted aryl group;

X<sub>1</sub> is selected from the group consisting of OH, O-dimethoxytrityl, O-methoxytrityl, O-trityl and an oxygen atom having an acid labile blocking group;

X<sub>2</sub> is a moiety reactive towards nucleophiles; and

W is a linking group having from 3 to 100 backbone atoms selected from C, N, O, S, Si and P, said linking group being cyclic, acyclic, aromatic or a combination thereof.

28. (Currently Amended): A quencher-phosphoramidite reagent compound having the formula:



wherein

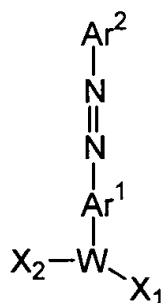
Ar<sup>1</sup> and Ar<sup>2</sup> are each independently a substituted or unsubstituted aryl group;

X<sub>1</sub> is selected from the group consisting of H, (C<sub>1</sub>-C<sub>12</sub>)alkyl, aryl, heteroaryl, and protected or unprotected functional group;

X<sub>2</sub> is selected from the group consisting of a phosphorous coupling moiety, a pentafluorophenoxy moiety and a succinimidyl moiety; and

W is a linking group having from 3 to 100 backbone atoms selected from C, N, O, S, Si and P, said linking group being cyclic, acyclic, aromatic or a combination thereof.

29. (Currently Amended): A quencher-phosphoramidite reagent compound having the formula:



wherein

$Ar^1$  and  $Ar^2$  are each independently a substituted or unsubstituted aryl group;

$X_1$  is selected from the group consisting of H, (C<sub>1</sub>-C<sub>12</sub>)alkyl, aryl, heteroaryl, and protected or unprotected functional group;

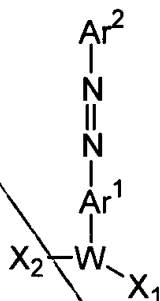
$X_2$  is a phosphoramidite; and

W is a linking group having from 3 to 100 backbone atoms selected from C, N, O, S, Si and P, said linking group being cyclic, acyclic, aromatic or a combination thereof.

30. (Canceled)

31. (Canceled)

32. (Currently Amended): A quencher-phosphoramidite reagent compound having the formula:



wherein

$Ar^1$  and  $Ar^2$  are each independently a substituted or unsubstituted aryl group;

$X_1$  is selected from the group consisting of H, (C<sub>1</sub>-C<sub>12</sub>)alkyl, aryl, heteroaryl, and protected or unprotected functional group;

sub  
C1  
B2  
CONT.

~~X<sub>2</sub> is a moiety reactive towards nucleophiles;~~

~~W is a linking group having from 3 to 100 backbone atoms selected from C, N, O, S, Si and P, said linking group being cyclic, acyclic, aromatic or a combination thereof; and~~

~~wherein one of Ar<sup>1</sup> and Ar<sup>2</sup> is directly or indirectly substituted with a substituted aryl group (Ar<sup>3</sup>), where Ar<sup>3</sup> extends the resonance ability of the Ar<sup>1</sup>-N=N-Ar<sup>2</sup> aromatic system and thereby increases the wavelength absorbance maximum of the compound.~~

33. (Previously Added): A compound of claim 32 wherein Ar<sup>1</sup> is directly substituted with Ar<sup>3</sup>.

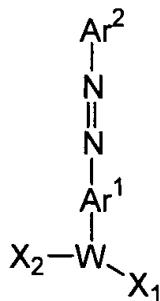
34. (Previously Added): A compound of claim 32 wherein Ar<sup>1</sup> is indirectly substituted with Ar<sup>3</sup>.

sub  
C1

35. (Previously Added): A compound of claim 32 wherein Ar<sup>2</sup> is directly substituted with Ar<sup>3</sup>.

36. (Previously Added): A compound of claim 32 wherein Ar<sup>2</sup> is indirectly substituted with Ar<sup>3</sup>.

37. (Currently Amended): A quencher-phosphoramidite reagent compound having the formula:



wherein

Ar<sup>1</sup> and Ar<sup>2</sup> are each independently a substituted or unsubstituted aryl group;

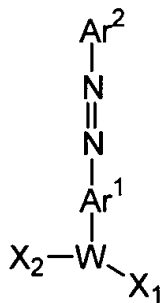
X<sub>1</sub> is selected from the group consisting of H, (C<sub>1</sub>-C<sub>12</sub>)alkyl, aryl, heteroaryl, and protected or unprotected functional group;

X<sub>2</sub> is a phosphoramidite;

W is a linking group having from 3 to 100 backbone atoms selected from C, N, O, S, Si and P, said linking group being cyclic, acyclic, aromatic or a combination thereof; and

wherein Ar<sup>1</sup> or Ar<sup>2</sup> is indirectly substituted with Ar<sup>3</sup> through a group selected from  $-(\text{C}\equiv\text{C})_n-$  and  $-(\text{CR}'=\text{CR}')_n-$  where n is 0 to 5 and R' is independently selected from hydrogen, (C<sub>1</sub>-C<sub>8</sub>)alkyl and heteroalkyl, unsubstituted aryl and heteroaryl, (unsubstituted aryl)-(C<sub>1</sub>-C<sub>4</sub>)alkyl, and (unsubstituted aryl)oxy-(C<sub>1</sub>-C<sub>4</sub>)alkyl.

38. (Currently Amended): A quencher-phosphoramidite reagent compound having the formula:



wherein

Ar<sup>1</sup> and Ar<sup>2</sup> are each independently a substituted or unsubstituted aryl group;

X<sub>1</sub> is selected from the group consisting of H, (C<sub>1</sub>-C<sub>12</sub>)alkyl, aryl, heteroaryl, and protected or unprotected functional group;

X<sub>2</sub> is a phosphoramidite;

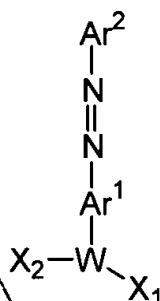
W is a linking group having from 3 to 100 backbone atoms selected from C, N, O, S, Si and P, said linking group being cyclic, acyclic, aromatic or a combination thereof; and

Ar<sup>1</sup> or Ar<sup>2</sup> is indirectly substituted with Ar<sup>3</sup> through a double bond selected from carbon-carbon and nitrogen-nitrogen double bonds.

39. (Canceled)

40. (Canceled)

41. (Currently Amended): A quencher-phosphoramidite reagent compound having the formula:



wherein

Ar<sup>1</sup> and Ar<sup>2</sup> are each independently a substituted or unsubstituted aryl group;

X<sub>1</sub> is selected from the group consisting of H, (C<sub>1</sub>-C<sub>12</sub>)alkyl, aryl, heteroaryl, and protected or unprotected functional group;

X<sub>2</sub> is a phosphoramidite;

W is a linking group having from 3 to 100 backbone atoms selected from C, N, O, S, Si and P, said linking group being cyclic, acyclic, aromatic or a combination thereof;

wherein one of Ar<sup>1</sup> and Ar<sup>2</sup> is directly or indirectly substituted with a substituted aryl group (Ar<sup>3</sup>), where Ar<sup>3</sup> extends the resonance ability of the Ar<sup>1</sup>-N=N-Ar<sup>2</sup> aromatic system and thereby increases the wavelength absorbance maximum of the compound; and

at least one of Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup> is substituted with -halogen, -OR', -OC(O)R', -NR'R'', -SR', -R', -CN, -NO<sub>2</sub>, -CO<sub>2</sub>R', -CONR'R'', -C(O)R', -OC(O)NR'R'',

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Amendment dated March 26, 2003  
Reply to Office Action of January 15, 2003

sub  
C1  
B4  
COO't  
-NR''C(O)R', -NR''C(O)<sub>2</sub>R', -NR'-C(O)NR''R''', -NH-C(NH<sub>2</sub>)=NH, -NR'C(NH<sub>2</sub>)=NH,  
-NH-C(NH<sub>2</sub>)=NR', -S(O)R', -S(O)<sub>2</sub>R', -S(O)<sub>2</sub>NR'R'', -N<sub>3</sub>, -CH(Ph)<sub>2</sub>,

perfluoro(C<sub>1</sub>-C<sub>4</sub>)alkoxy, and perfluoro(C<sub>1</sub>-C<sub>4</sub>)alkyl, in a number ranging from zero to the  
total number of open valences on the aromatic ring system; and where R', R'' and R'''  
are independently selected from hydrogen, (C<sub>1</sub>-C<sub>8</sub>)alkyl and heteroalkyl, unsubstituted  
aryl and heteroaryl, (unsubstituted aryl)-(C<sub>1</sub>-C<sub>4</sub>)alkyl, and (unsubstituted aryl)oxy-  
(C<sub>1</sub>-C<sub>4</sub>)alkyl.

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